Stated Meeting, December 19th, 1873.

Present, 27 members.

Vice-President, Mr. FRALEY, in the Chair.

A letter acknowledging the reception of his diploma of membership was received from Il Commandatore Prof. Giovanni Capellini, Direttore delle Museo Geologico della R. Universitá, dated Bologna, Nov. 28th, 1873.

A letter acknowledging the receipt of Proceedings of Am. Philos. Society, Nos. 88, 89, was received from the Bureau des Longitudes, dated Observatoire National de Paris, July 29th, 1873.

A letter acknowledging the receipt of Proceedings No. —, and announcing the envoy of the Bulletin of the Mexican Geographical Society, was received from the first Secretary, Sig. Ignacio M. Altamirano, dated Mexico, Oct. 31, 1873.

Donations for the Library were received from the Royal Prussian and Belgian Academies, the Geographical Society and Revue Politique of Paris, London Nature, the Literary and Philosophical Society of Quebec, the Essex Institute, Silliman's Journal, the New Jersey Historical Society, the Franklin Institute, American Chemist, and American Journal of Pharmacy, Coe, Wetherill & Co., of Philadelphia, and the Geographical and Statistical Society of Mexico.

The death of a member, Mr. George C. Schaeffer, at Washington, October 4th, aged 59, was announced by the Secretary.

The death of a member, Louis John Rudolph Agassiz, at Cambridge, Mass., December 14th, aged 66, was announced by Dr. LeConte. On motion, a committee was appointed to

prepare suitable resolutions to express the regret of the members of the Society at the loss. The Committee consists of Dr. LeConte, Mr. Lesley and Dr. Carson.

Mr. Holman exhibited, by request of the members, his new method for observing the circulation of the blood, by throwing upon a screen a lime-light image of one water-animal after another, enclosed between two glasses. Cavities are ground out of the glass-slides, of a size and shape to fit the animal's body, restrain its movements and permit the transparent tissue to be focussed on the screen. To protect the creature from the heat a simple apparatus, of india-rubber tubes, permits a constant current of cold water to pass around the subject between the glasses.

On motion of Mr. Walter the thanks of the Society were tendered to Mr. Holman for the very interesting exhibition with which he had obliged the Society.

Mr. Blake presented to the Society, in the name of the Swedish Commission at Vienna, a copy of a work entitled "Results of an experimental inquiry into the mechanical properties of steel, &c, manufactured by Christian Aspelin, Esq., Westanfors and Fagersta Works, Sweden," by David Kirkaldy; illustrated by plates. London: Testing and Experimental Works, Southwark St., S. E., 1873.

He described Kirkaldy's magnificent exhibition in the building at Vienna, and directed the members' attention specially to the distorted circles and squares (engraved on annealed and unannealed steel plates) after tension, proving visibly the universal distribution of the strain and consequent movement of molecules throughout the mass of steel. He thought that an important conclusion might be drawn from this by the physicist discussing such questions in geology as that of the elongation of pebbles in conglomerate rocks.

A discussion took place among the members present, par-

ticipated by Messrs. Briggs, Lesley, and Rand, and by Dr. R. E. Rogers.

Mr. Blake based his arguments on such facts as those which he had observed, in examining the so-called "Gravestone" slates of California, and pebbly conglomerates of Arizona, in which, he alleged, all the quartz pebbles lying in a mica slate matrix were evidently elongated in one direction. He did not agree with the late Dr. Hitchcock in calling in the intervention of heat and moisture to account for the elongation of the Vermont and Rhode Island pebbles in conglomerate; for Kirkaldy's plates were of cold steel. Physicists must accept as a law the plasticity of all matter, even in a dry and cold state, under sufficiently exacting conditions of pressure and time.

Dr. Rogers considered such an hypothesis very hard to entertain. He did not believe the alleged fact of the elongation of pebbles in conglomerate rocks. The shape of the Newport pebbles was certainly given to them by attrition on the sea beach before the consolidation of the deposits. The elongation of a quartz-pebble in a softer matrix is impossible, because the power exerted can have no firm hold on the pebble, which may change its place in the yielding matrix, but without changing its shape. A conglomerate must be homogeneous like a mass of steel to exhibit the effects portrayed by Kirkaldy, and no such conglomerate exists.

Mr. Lesley agreed with Dr. Rogers in this opinion; but adduced such facts as the sigmoid flexures in gneiss and mica slate rocks, to show that quartz string-veins are sharply bent without fracture, proving the plasticity of quartz. Sometimes these zigzags are so numerous and the plications so sharp, that, if pulled out straight, an unbroken quartz vein would extend hundreds of feet. He said that once, in company with Mr. Edouard Désor, he had found upon the outcrop of the coal measure conglomerate the impression of

a calamite stem, crossing matrix and pebbles alike, impressing the quartz pebbles precisely as it impressed the cement between them. He believed in the plasticity of all matter, and that, if we could devise machinery for securing a diamond in a grip strong enough, we could elongate it like steel.

Mr. Briggs reminded the Society that Kirkaldy's visible demonstration had been theoretically anticipated by L'Aimée in his rare and too little known Treatise on Strains within the limits of Elasticity. Indeed, some of Kirkaldy's results are depicted in that work. Mechanical philosophers are apt to assign too high a value to such realistic demonstrations, and too low a value to proofs and conclusions obtained through transcendental mathematics.

The Chairman of the Finance Committee reported the following appropriations for the ensuing year, which, on the recommendation of the Committee were so ordered:

Salary of Librarian	$700 00
Assistant Librarian	360 00
Janitor	100 00
Binding Books	200 00
Subscriptions to Journals	50 00
Insurance	200 00
Hall Committee	200 00
Petty Expenses of Librarian	150 00
Publications, in addition to the interest on the Publication Fund	2500 00
General Expenses, including the commissions of the Treasurer	850 00
	$5310 00

Pending nomination No. 740, and new nominations Nos. 741, 742, 743, 744 were read;

And the meeting was adjourned.